KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

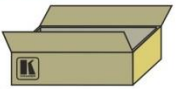
VM-114H4C
2 Input 1:4 HDMI DA/4x CAT5 Outputs

P/N: 2900-000645 Rev 9

VM-114H4C Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerelectronics.com/support/product_downloads.asp to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box



- **VM-114H4C** 2 Input 1:4 HDMI DA/4xCAT5 Outputs
- 1 Power supply (12V DC)
- 4 Rubber feet
- 1 Quick Start sheet
- Kramer **RC-IR3** Infrared Remote Control Transmitter with batteries and user manual

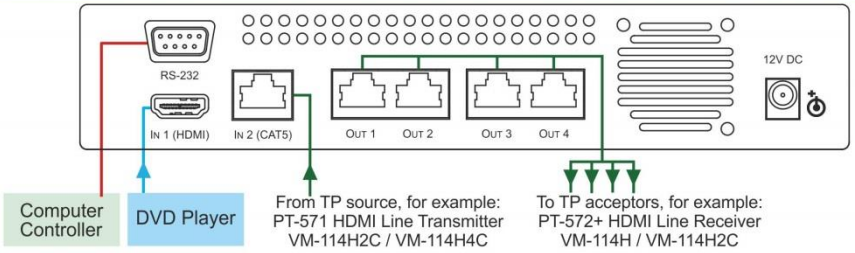
Save the original box and packaging materials in case you need to return your **VM-114H4C** for service.

Step 2: Install the VM-114H4C

Attach the rubber feet and place on a table or mount the **VM-114H4C** in a rack (using an optional **RK-1** rack mount).

Step 3: Connect the inputs and outputs

Always switch off the power on each device before connecting it to your **VM-114H4C**.



Always use Kramer high-performance cables for connecting AV equipment to the **VM-114H4C.**

Step 4: Connect the power

Connect the 12V DC power adapter to the **VM-114H4C** and plug the adapter into the mains electricity.

Step 5: Acquire the EDID

1. Press the EDID SELECT button to cycle through the EDID sources in the following order:
   Output 1 (Output 1 LED lights)
   Output 2 (Output 2 LED lights)
   Output 3 (Output 3 LED lights)
   Output 4 (Output 4 LED lights)
   Default EDID (all LEDs light)
   Auto-Mix EDID (the LEDs flash in a running sequence)
2. To store the EDID, press EDID READ and the EDID is acquired.

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront video, audio, presentation, and broadcasting professionals on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 14 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Video Products; GROUP 12: Digital Signage; GROUP 13: Audio; and GROUP 14: Collaboration.

Congratulations on purchasing your Kramer **VM-114H4C** 2 *Input 1:4 HDMI DA/4x CAT5 Outputs*, which is ideal for the following typical applications:

- Home theater**,** presentation and multimedia applications
- Rental and staging

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual

Go to http://www.kramerelectronics.com/support/product_downloads.asp to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **VM-114H4C** away from moisture, excessive sunlight and dust

This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.

2.2 Safety Instructions

Caution: There are no operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

Warning: Disconnect the power and unplug the unit from the wall before installing

2.3 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at *http://www.kramerelectronics.com/support/recycling/*.

3 Overview

The high quality **VM-114H4C** is a switcher/distribution amplifier for HDMI and TP (Twisted Pair) signals. It reclocks and equalizes one of two selectable input signals and distributes it to four TP outputs.

In particular, the **VM-114H4C**:

- Supports up to 4.95Gbps (1.65Gbps bandwidth per graphic channel) (DGKat)
- Can read and store in non-volatile memory the default EDID or the EDID block from one or a mix of the output display devices, so it can then provide the EDID information to the source even if the display device is not connected

  The EDID acquired is a weighted average of all the connected outputs. For example, if several displays with different resolutions are connected to the outputs, the acquired EDID supports all the resolutions, as well as other parameters included in the EDID.
- Features I-EDIDPro™ Kramer Intelligent EDID Processing™ – Intelligent EDID handling & processing algorithm ensures Plug and Play operation for HDMI systems
- Supports HDMI 3D Pass-through, Deep Color, x.v.Color™ and uncompressed audio channels (Dolby TrueHD, DTS-HD)
- Is HDCP compliant
- Features LEDs indicating the selected input and active output
- Supports IR remote control and has a remote IR 3.5mm mini jack
- Is 12V DC fed and is housed in a Kramer Desktop enclosure

The **VM-114H4C** supports a range of:

- Up to 90m (295ft) at 1080i, or up to 30m (98ft) at 1080p on shielded **BC-DGKat524** cable
- Up to 90m (295ft) at 1080i, or up to 70m (230ft) at 1080p on shielded **BC-DGKat623** cable
- Up to 100m (330ft) at 1080i or up to 90m (295ft) at 1080p on shielded **BC-DGKat7a23** cable

You can daisy-chain up to six devices with the maximum overall distance between the first and last devices being cumulative and limited by the cable type used.

3.1 Using Twisted Pair Cable

Kramer engineers have developed special twisted pair cables to best match our digital twisted pair products; the Kramer: **BC-DGKat524** (CAT 5 24 AWG), the Kramer: **BC-DGKat623** (CAT 6 23 AWG cable), and the Kramer: **BC-DGKat7a23** (CAT 7a 23 AWG cable). These specially built cables significantly outperform regular CAT 5 / CAT 6 / CAT 7a cables.

3.2 About the Power Connect™ Feature

The Power Connect™ feature here means that only one unit in a system, the transmitter or receiver, needs to be connected to a power source when the devices are within 90m (270ft) of each other. The Power Connect™ feature applies as long as the cable can carry power and the distance does not exceed 90m on standard TP cable. (Heavier gauge cable may be used to extend the Power Connect™ range).

Warning: Using a TP cable that is incorrectly wired can cause permanent damage to the device!

3.3 Defining the VM-114H4C

This section defines the **VM-114H4C**.

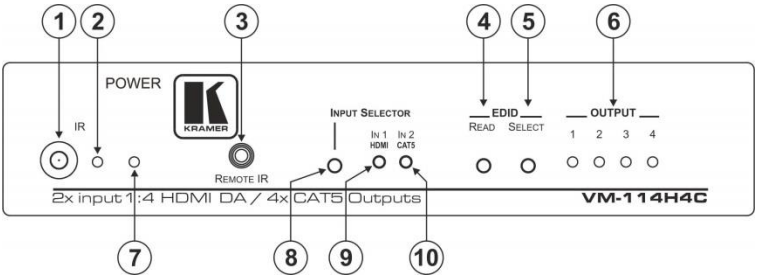


Figure 1: VM-114H4C Front Panel

#	Feature	Function
1	*IR* Remote Control Sensor	Sensor for the remote control IR transmitter
2	*IR* LED	Lights yellow when receiving signals from the IR remote control transmitter
3	*REMOTE IR* 3.5mm Mini Jack	Connect to a remote infrared sensor
4	*EDID READ* Button	Press (when one of the input LEDs is flashing to indicate a selected input) to read the selected EDID (see Section 5.1)
5	*EDID SELECT* Button	Press repeatedly to cycle through the inputs to select an input from which to read the EDID. The relevant LED flashes (see Section 5.1)
6	*OUTPUT* LEDS *(1-4)*	The relevant LED lights green when an acceptor is connected to the output. Also lights or flashes during EDID setup (see Section 5.1)
7	*POWER* LED	Lights green when the unit receives power
8	*INPUT SELECTOR* Button	Press to select an input. The relevant input LED lights
9	*IN1 (HDMI)* Input LED	Lights green when HDMI input 1 is selected
10	*IN2 (CAT5)* Input LED	Lights green when the TP input 2 is selected

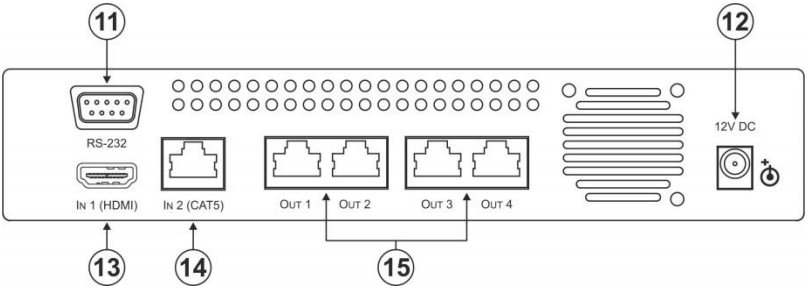


Figure 2: VM-114H4C Rear Panel

#	Feature	Function
11	*RS-232* 9-pin D-sub (F) Connector	Connect to a PC or remote controller
12	*12V DC* Power Connector	Connect to the +12V DC power adapter, center pin positive
13	*IN1 (HDMI)* Input HDMI Connector	Connect to an HDMI source
14	*IN2 (CAT5)* Input RJ-45 Connector	Connect to a TP source (for example, PT-571 HDMI Line Transmitter, VM-114H2C or **VM-114H4C**)
15	TP RJ-45 Output Connectors (1-4)	Connect to the TP acceptors (for example, PT-572+ HDMI Line Receiver, VM-114H or **VM-114H4C**)

4 Connecting the VM-114H4C

Always switch off the power to each device before connecting it to your **VM-114H4C**. After connecting your **VM-114H4C**, connect its power and then switch on the power to each device.

To connect the **VM-114H4C** as illustrated in the example in Figure 3:

1. Connect the HDMI source (for example, a DVD player) to the IN 1 (HDMI) connector.
2. Connect the TP source (for example, a **PT-571** *HDMI Line Transmitter*, another **VM-114H2C** or a **VM-1114H4C**) to the IN 2 (CAT 5) connector.
3. Connect the TP RJ-45 outputs to up to four TP acceptors (for example, the **PT-572+** *Line Receiver*, the **VM-114H** or the **VM-114H2C**).
4. (Optional) Connect the front panel remote IR 3.5mm mini jack to the remote IR sensor.
5. (Optional) Connect a PC via RS-232 to the RS-232 port on the **VM-114H4C** (see Section 4.1).

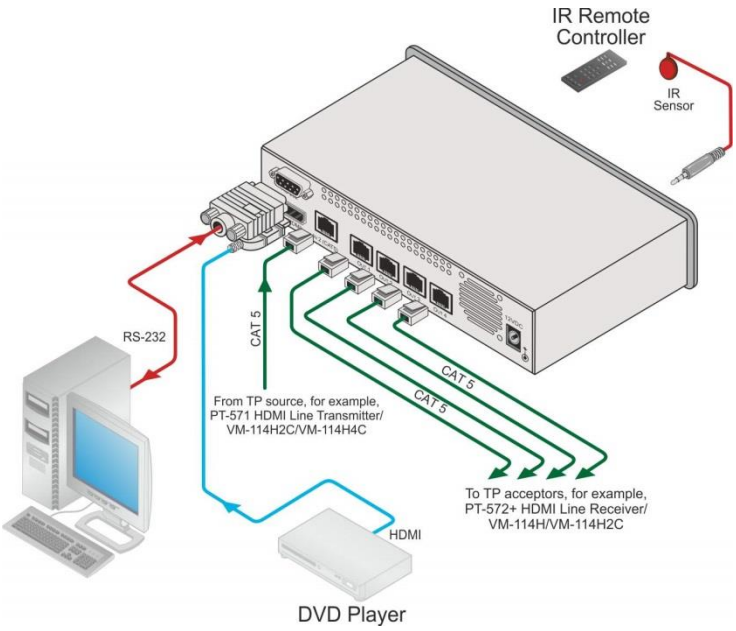


Figure 3: Connecting the VM-114H4C 2 Input 1:4 HDMI DA/4x CAT5 Outputs

4.1 Connecting to the VM-114H4C via RS-232

You can connect to the **VM-114H4C** via an RS-232 connection using, for example, a PC. Note that a null-modem adapter/connection is not required.

To connect to the **VM-114H4C** via RS-232:

- Connect the RS-232 9-pin D-sub rear panel port on the product unit via a 9-wire straight cable (only pin 2 to pin 2, pin 3 to pin 3, and pin 5 to pin 5 need to be connected) to the RS-232 9-pin D-sub port on your PC

5 Using the VM-114H4C

This section explains how to:

- Acquire the EDID (Section 5.1)
- Enable/disable deep color support (Section 5.2)

5.1 Acquiring the EDID

Each input on the **VM-114H4C** has a factory default EDID loaded (see Section 9). This lets you connect the power before having to connect one of the acceptors.

The **VM-114H4C** reads the EDID, which is stored in the non-volatile memory.

You can acquire the EDID from:

This is usually done only once, when the machine is being set up in an installation. Once acquired, the EDID is saved in non-volatile memory and further acquisition is not necessary.

- One output (the relevant output LED flashes)
- The default EDID (all output LEDs flash)
- Up to four connected outputs using the Auto-mix Mode (all output LEDs light)

  The EDID acquired is a weighted average of all the connected outputs. For example, if several displays with different resolutions are connected to the outputs, the acquired EDID supports all the resolutions, as well as other parameters included in the EDID.

To acquire the EDID:

1. Connect the output(s) from which you want to acquire the EDID.
2. Press the EDID SELECT button briefly. The last acquired EDID is indicated by the lit LED (for example, if Output LED 2 is lit, the EDID acquired was from Output 2).
   The device enters the EDID programming mode.
3. Press the EDID SELECT button repeatedly until the required EDID is indicated based on the patterns described above.
4. Press the EDID READ button.
   The relevant LEDs flash in a pattern for a few seconds as follows:

- Slowly and then no longer lights. The EDID was successfully read
- Quickly and then no longer lights. The EDID was not read and the default EDID was stored

5.2 Disabling/Enabling Deep Color Support

You can disable EDID deep color support to prevent signal deterioration when using long twisted pair cables on INPUT 2.

To disable deep color and acquire EDID:

1. Disconnect the power.
2. Connect the output or outputs from which you want to acquire the EDID.
3. Connect the power while pressing the EDID READ button.
4. Perform steps 3 through 5 in Section 5.1.

To enable deep color and acquire EDID:

1. Disconnect the power.
2. Connect the output or outputs from which you want to acquire the EDID.
3. Connect the power while pressing the EDID SELECT button.
4. Perform steps 3 through 5 in Section 5.1.

6 RS-232, IR Control and Pass-through

The **VM-114H4C** can be controlled via RS-232 and infrared. Depending on how the RS-232 and IR connections are configured dictates whether the device responds to control signals or transparently pass them through to another receiver or transmitter. Three examples of various configurations in Sections 6.2.1, 6.2.2 and 6.2.3 illustrate this functionality.

6.1 RS-232 Control and Pass-through Using the VM-114H4C

As shown in Figure 3, you can connect a PC (or other serial controller) directly to the **VM-114H4C** to control the **VM-114H4C.**

The **VM-114H4C** also transparently passes bidirectional RS-232 signals over the CAT 5 cable from the **TP-573** transmitter to the **TP-574** receiver. For example, a PC connected to the RS-232 port on the **TP-573** can control an RS-232-controllable device (for example, a projection screen) connected to the **TP-574**.

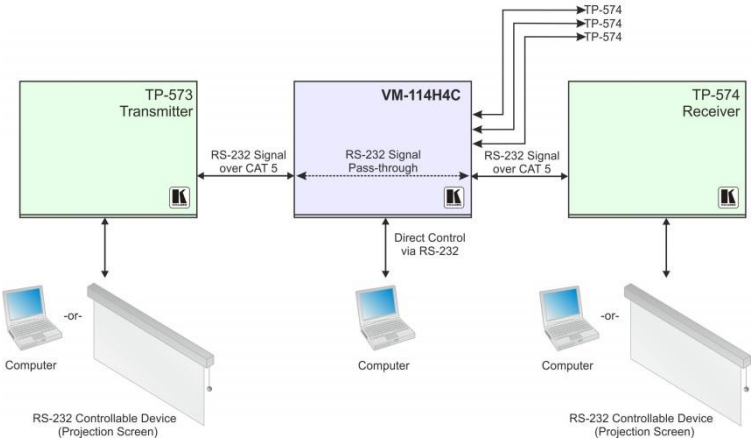


Figure 4: VM-114H4C RS-232 Control and Pass-through

6.2 Local IR Control and IR Pass-through Using the VM-114H4C

The **VM-114H4C** provides an IR sensor and a 3.5mm mini jack for connecting a remote IR emitter or sensor. When the **VM-114H4C** is connected to suitable transmitters and receivers (for example, the **TP-573** and **TP-574)**, the **VM-114H4C** can act as a pass-through for IR control signals, allowing remote control of multiple devices using multiple IR remote controllers.

When there is no IR sensor or emitter connected to the IR Remote 3.5mm mini jack, all signals received by the IR sensor on the front panel are passed to the transmitter and receiver bi-directionally over the CAT 5 cable allowing control of remote devices.

When an IR sensor or emitter is connected to the IR Remote 3.5mm mini jack, the connection between the IR sensor on the front panel and the IR on the transmitter/receiver is broken so that any signal received by the IR sensor on the front panel remains local to the **VM-114H4C** and controls only the **VM-114H4C**.

To control any device you need to use the appropriate IR remote controller, for example, the Kramer remote controller controls Kramer devices, the LCD remote controller controls the LCD display and so on, as shown in the following examples.

The following examples illustrate just three of the possible ways of connecting the **VM-114H4C** to provide local and remote IR control.

6.2.1 IR Local Control and Pass-through, Example One

The configuration is shown in Figure 5.

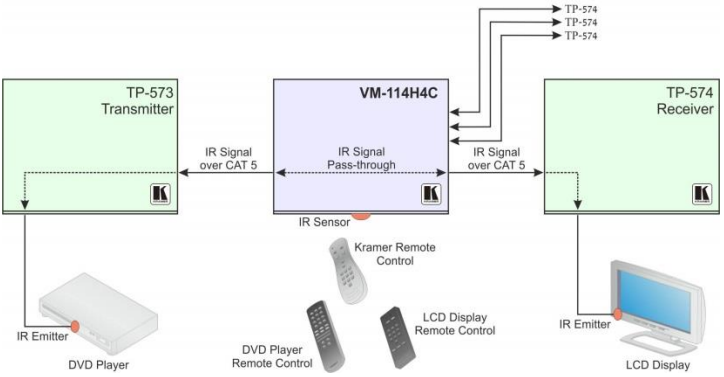


Figure 5: VM-114H4C IR Control and Pass-through Example One

- A DVD player is connected to the **TP-573** transmitter via an IR emitter.
- An LCD display is connected to the **TP-574** receiver via an IR emitter.
- Both the **TP-573** and the **TP-574** are connected to the **VM-114H4C** via TP cabling.
- Point the appropriate remote control for the device at the **VM-114H4C** IR sensor to control a device.

6.2.2 IR Local Control and Pass-through, Example Two

The configuration is shown in Figure 6.

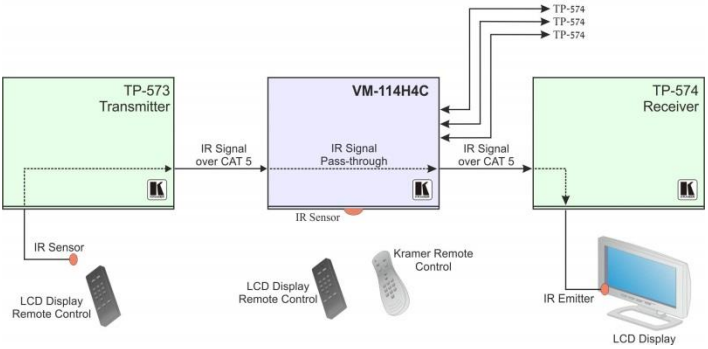


Figure 6: VM-114H4C IR Control and Pass-through Example Two

- An IR sensor is connected to the **TP-573** transmitter.
- An LCD display is connected to the **TP-574** receiver via an IR emitter.
- Both the **TP-573** and the **TP-574** are connected to the **VM-114H4C** via TP cabling.
- Point the LCD display remote control either at the **TP-573** IR sensor or at the **VM-114H4C** IR sensor to control the LCD display. Point the Kramer remote control at the **VM-114H4C** IR sensor to control the **VM-114H4C**.

6.2.3 IR Local Control and Pass-through, Example Three

The configuration is shown in Figure 7.

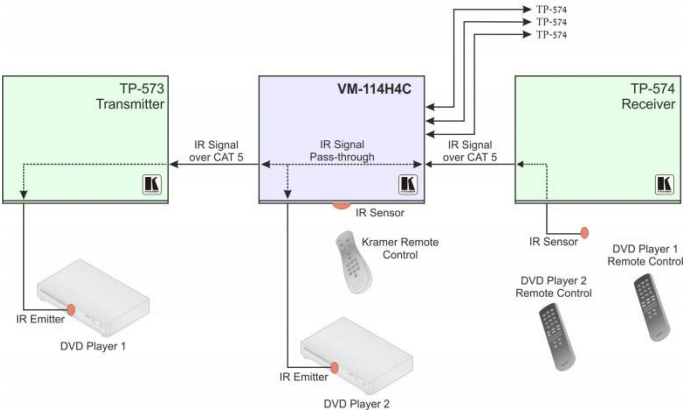


Figure 7: VM-114H4C IR Control and Pass-through Example Three

- The first DVD player (player 1) is connected to the **TP-573** transmitter via an IR emitter.
- The second DVD player (player 2) is connected to the **VM-114H4C** via an IR emitter.
- An IR sensor is connected to the **TP-574** receiver.
- Both the **TP-573** and the **TP-574** are connected to the **VM-114H4C** via TP cabling.
- To control DVD player 1, point the DVD player 1 IR remote control at the **TP-574** IR sensor. To control DVD player 2, point the DVD player 2 IR remote control at the **TP-574** IR sensor. Point the Kramer remote control at the **VM-114H4C** IR sensor to control the **VM-114H4C**.

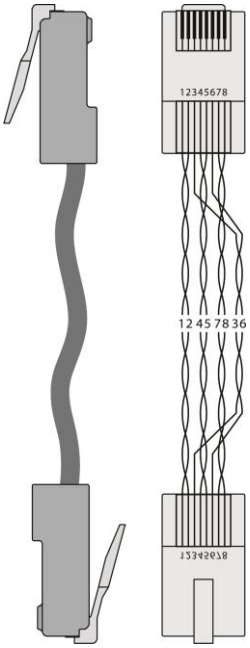
6.3 Wiring the TP LINE IN / LINE OUT RJ-45 Connectors

This section defines the TP pinout, using a **straight** pin-to-pin cable with RJ-45 connectors.

Note, that the cable ground shielding must be connected / soldered to the connector shield.

EIA /TIA 568B	
PIN	**Wire Color**
1	Orange / White
2	Orange
3	Green / White
4	Blue
5	Blue / White
6	Green
7	Brown / White
8	Brown

Figure 8: TP PINOUT



7 Technical Specifications

INPUTS:	1 HDMI Connector 1 TP on an RJ-45 Connector
OUTPUTS:	4 TP on RJ-45 Connectors
MAX. DATA RATE:	4.95Gbps (1.65Gbps bandwidth per graphic channel) (DGKat)
COMPLIANCE WITH HDMI STANDARD:	Supports HDMI and HDCP
CONTROLS:	Input select button, EDID select button, panel lock button, RS-232, local and remote IR controls
INDICATOR LEDs:	IR communication, Power, IN 1 HDMI, IN 2 CAT5, OUTPUT 1, 2, 3 and 4
POWER CONSUMPTION:	12V DC, 2A
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)
STORAGE TEMPERATURE:	-40° to +70°C (-40° to 158°F)
HUMIDITY:	10% to 90%, RHL non-condensing
DIMENSIONS:	21.5cm x 16.3cm x 4.4cm (8.5in x 6.4in x 1.7in) W, D, H
WEIGHT:	0.9kg (1.98lbs) approx.
INCLUDED ACCESSORIES:	Power supply, RC-IR3 infrared remote control transmitter
OPTIONAL:	RK-1 19” rack adapter
Specifications are subject to change without notice at http://www.kramerelectronics.com	

8 Default Communication Parameters

The following table lists the default Protocol 2000 communication parameters for the **VM-114H4C**.

RS-232	
Baud Rate:	9600
Data Bits:	8
Stop Bits:	1
Parity:	None
Command Format:	HEX
Example (Output 1 to Input 1):	0x01, 0x81, 0x81, 0x81

9 Default EDID

The factory default EDID is listed below:

```
Monitor
  Model name..... VM114H4C
  Manufacturer..... KRM
  Plug and Play ID..... KRM0114
  Serial number..... 505-707455010
  Manufacture date..... 2009, ISO week 10
  ------------------------
  EDID revision..... 1.3
  Input signal type..... Digital
  Color bit depth..... Undefined
  Display type..... RGB color
  Screen size..... 520 x 320 mm (24.0 in)
  Power management..... Standby, Suspend, Active off/sleep
  Extension blocs..... 1 (CEA-EXT)
  ------------------------
  DDC/CI..... n/a

Color characteristics
  Default color space..... Non-sRGB
  Display gamma..... 2.20
  Red chromaticity..... Rx 0.674 - Ry 0.319
  Green chromaticity..... Gx 0.188 - Gy 0.706
  Blue chromaticity..... Bx 0.148 - By 0.064
  White point (default).... Wx 0.313 - Wy 0.329
  Additional descriptors... None

Timing characteristics
  Horizontal scan range.... 30-83kHz
  Vertical scan range..... 56-76Hz
  Video bandwidth..... 170MHz
  CVT standard..... Not supported
  GTF standard..... Not supported
  Additional descriptors... None
  Preferred timing..... Yes
  Native/preferred timing.. 1280x720p at 60Hz (16:10)
    Modeline..... "1280x720" 74.250 1280 1390 1430 1650 720 725 730 750 +hsync +vsync

Standard timings supported
    720 x 400p at 70Hz - IBM VGA
    640 x 480p at 60Hz - IBM VGA
    640 x 480p at 75Hz - VESA
    800 x 600p at 60Hz - VESA
    800 x 600p at 75Hz - VESA
   1024 x 768p at 60Hz - VESA
   1024 x 768p at 75Hz - VESA
   1280 x 1024p at 75Hz - VESA
   1280 x 1024p at 60Hz - VESA STD
   1600 x 1200p at 60Hz - VESA STD
   1152 x 864p at 75Hz - VESA ST
```

10 Protocol 2000

Protocol 2000 is an RS-232/RS-485 communication protocol that uses four bytes of information as defined below.

For RS-232, a null-modem connection between the machine and controller is used. The default data rate is 9600 baud, with no parity, 8 data bits and 1 stop bit.

Note: Compatibility with Kramer's Protocol 2000 does not mean that a machine uses all of the protocol commands. Each machine uses a sub-set of Protocol 2000, according to its needs.

10.1 Syntax

MSB							LSB
1st Byte	DESTINATION	INSTRUCTION					
0	D	N5	N4	N3	N2	N1	N0
7	6	5	4	3	2	1	0

2nd Byte	INPUT						
1	I6	I5	I4	I3	I2	I1	I0
7	6	5	4	3	2	1	0

3rd Byte	OUTPUT						
1	O6	O5	O4	O3	O2	O1	O0
7	6	5	4	3	2	1	0

4th Byte			MACHINE NUMBER				
1	OVR	X	M4	M3	M2	M1	M0
7	6	5	4	3	2	1	0

1st Byte: Bit 7 – Defined as 0
D – DESTINATION:
0 – Sends information to the switchers (from the PC)
1 – Sends information to the PC (from the switcher)
N5…N0 – INSTRUCTION
The 6-bit INSTRUCTION defines the function performed by the switcher(s). If a function is performed using the machine's keyboard, these bits are set with the INSTRUCTION NO. performed. The instruction codes are defined according to the table below (INSTRUCTION NO. is the value set in N5…N0).

2nd Byte: Bit 7 – Defined as 1
I6…I0 – INPUT
When switching (i.e. instruction codes 1 and 2), the 7-bit INPUT is set as the input number to be switched. If switching is done using the machine's front panel, these bits are set with the INPUT NUMBER switched. For other operations, these bits are defined according to the table.

3rd Byte: Bit 7 – Defined as 1
O6…O0 – OUTPUT
When switching (i.e. instruction codes 1 and 2), the 7-bit OUTPUT is set as the output number to be switched. If switching is done using the machine's front panel, these bits are set with the OUTPUT NUMBER switched. For other operations, these bits are defined according to the table.

4th Byte: Bit 7 – Defined as 1
Bit 5 – Don't care
OVR – Machine number override
M4…M0 – MACHINE NUMBER
This byte is used to address machines in a system by their machine numbers. When several machines are controlled from a single serial port, they are usually configured together and each machine has an individual machine number. If the OVR bit is set, then all machine numbers accept (implement) the command and the addressed machine replies. When a single machine is controlled over the serial port, always set M4…M0 to 1, and make sure that the machine itself is configured as MACHINE NUMBER = 1.

10.2 Instruction Codes

All the values in the table are decimal, unless otherwise stated

Instruction Codes for Protocol 2000				
Instruction		Definition for Specific Instruction		Notes
#	Description	Input	Output	
1	SWITCH VIDEO	Set equal to video input that is switched (0 = disconnect)	Set equal to video output that is switched (0 = to all the outputs)	2
61	IDENTIFY MACHINE	1 – Video machine name 2 – Audio machine name 3 – Video software version 4 – Audio software version 5 – RS-422 controller name 6 – RS-422 controller version 7 – Remote control name 8 – Remote software version 9 – Protocol 2000 revision 10 – Control data machine name 11 – Control data software version	For names: 0 – Request first 4 digits 1 – Request first suffix 2 – Request second suffix 3 – Request third suffix 10 – Request first prefix 11 – Request second prefix 12 – Request third prefix For versions: 0 – main board or the number of external board	13
62	DEFINE MACHINE	1 – Number of inputs 2 – Number of outputs 3 – Number of setups	1 – For video 2 – For audio 3 – For SDI 4 – For remote panel 5 – For RS-422 controller 6 – For control data	14

NOTES on the above table:

NOTE 2 – These are bi-directional definitions. If the switcher receives the code, it performs the instruction. If the instruction is performed (due to a keystroke operation on the front panel), then these codes are sent.
For example, if the PC sends HEX code:
01 85 88 83
then the switcher (machine 3) switches input 5 to output 8.
If the user switches input 1 to output 7 using the front panel buttons, the switcher sends HEX code:
41 81 87 83
to the PC.
When the PC sends one of the commands in this group to the switcher, if the instruction is valid, the switcher replies by sending the same four bytes to the PC that it received (except for the first byte, where the DESTINATION bit is set high).

NOTE 13 – This is a request to identify the switcher/s in the system. If the OUTPUT is set as 0, and the INPUT is set as 1, 2, 5 or 7, the machine sends its name. The reply is the decimal value of the INPUT and OUTPUT.
For example, for a 2216, the reply to the request to send the audio machine name is HEX code:
7D 96 90 81 (i.e. 128_{dec}+ 22_{dec} for 2nd byte, and 128_{dec}+ 16_{dec} for 3rd byte).

If the request for identification is sent with the INPUT set as 3 or 4, the appropriate machine sends its software version number. Again, the reply would be the decimal value of the INPUT and OUTPUT - the INPUT representing the number in front of the decimal point, and the OUTPUT representing the number after it.
For example, for version 3.5, the reply to the request to send the version number would be HEX code:
7D 83 85 81 (i.e. 128_{dec}+ 3_{dec} for 2nd byte, 128_{dec}+ 5_{dec} for 3rd byte).

If the OUTPUT is set as 1, then the ASCII coding of the lettering following the machine's name is sent.
For example, for the VS-7588YC, the reply to the request to send the first suffix would be HEX code:
7D D9 C3 81 (i.e. 128_{dec}+ ASCII for "Y"; 128_{dec}+ ASCII for "C").

NOTE 14 – The number of inputs and outputs refers to the specific machine being addressed, *not* to the system.
For example, if six 16x16 matrices are configured to make a 48x32 system (48 inputs, 32 outputs), the reply to the HEX code:
3E 82 81 82 (i.e. request the number of outputs)
would be HEX code:
7E 82 90 82 (i.e. 16 outputs).

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Disconnect the unit from the power supply before opening and servicing

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